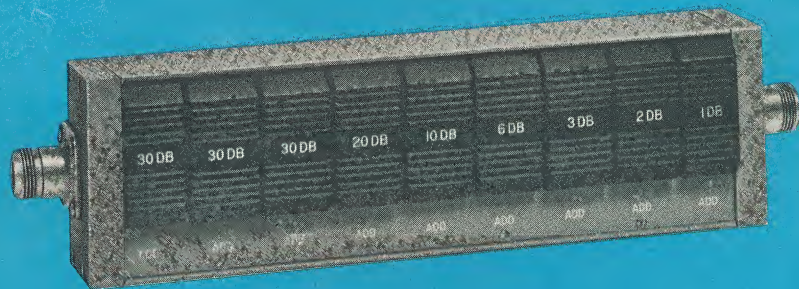


Include Audio range

PRECISION ATTENUATORS

FROM **KAY's** Attenuator Workshop

The wide attenuation range and flexible controls of in-line attenuators are boosted to the 4GHz region by a unique, segmented, intrinsic, switch-cavity assembly. New operating specs approach and rival the performance of fixed coaxial pads. However, no cumbersome coupling and uncoupling are required nor are awkward twist and shift mechanics needed. A simple slide switch operation controls individual steps of 1, 2, 3, 6, 10, 20, 30, 30, 30 db.



New...DC-4GHz COAXIAL ATTENUATOR

0-132 db in switched 1 db steps

SERIES 110

- DC-4 GHz
- 0-132 DB IN 1 DB STEPS
- OVERALL ACCURACY: 2% up to Max. of 1 db at 1 GHz
5% up to Max. of 5 db at 4 GHz
- MAXIMUM VSWR: 1.15:1 to 1 GHz
1.9:1 to 4 GHz
- TYPICAL INSERTION LOSS: $\leq .2$ db at 1 GHz
 $\leq .6$ db at 4 GHz

Controls: Slide Switches

Connectors: Type N

Dimensions: $8\frac{3}{8}$ " x $2\frac{3}{8}$ " x $1\frac{5}{8}$ "

Price: \$295.00

SERIES 20

431C 441B 451B

SERIES 30

432D 442C 452C



Kay in-line attenuators are designed to provide a means of inserting an accurate and fixed amount of loss in circuits operating in the DC - 1 GHz range. Attenuation is controlled by field-proven high-frequency toggle switches. Solid silver contacts set in teflon for low loss and superior match are employed throughout. The precision resistors used are 1% tolerance, carbon film resistors. The maximum total error is very low and incidental insertion loss is negligible. These units have met rigid environmental tests and are traceable to N. B. S.

The Series 20 in-line, toggle-type attenuators provide 41 db* of attenuation in six precise steps of 20, 10, 5, 3, 2, and 1 db. Similar to the Series 20, the Series 30 Attenuators provide 101 db of attenuation including three additional 20 db steps. Both series are available in either 50, 75, or 90 ohm characteristic impedance. The individually-switched steps are isolated in broad-tuned, shielded compartments, providing high accuracy and a flat frequency response over the specified range. All models are symmetrical, (bi-directional), attenuators.

SERIES 70

1/432C 1/442C 1/452C

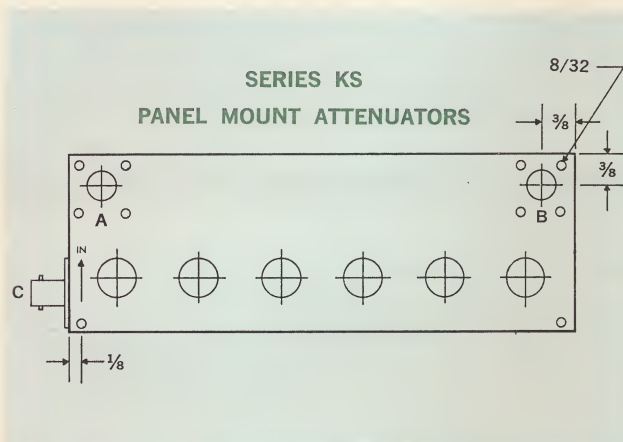
The Series 70 models are vernier attenuators which provide fine control of attenuation when used as a separate unit or in series with Kay 1 db step attenuators. It provides 22.1 db of attenuation in precise .1 db increments and is available in 50, 75, or 90 ohms impedance.

SERIES 90

4439A 449A 459A

Kay's new in-line miniature attenuators, the 90 Series, provide from zero to 101 db of attenuation in precise 1 db steps. Miniature, high-frequency toggle switches featuring solid-silver contacts set in teflon, are positioned in highly shielded compartments, substantially reducing the maximum total error and minimizing incidental insertion loss. The 90 Series covers a range

from DC to 1 GHz and is available in either 50, 75, or 90 ohm impedance. This rugged, compact attenuator weighs only 8 oz. and is less than 6¼ inches long, including BNC-Type connectors.



To afford maximum utility, Kay in-line attenuators are available for your special built-in applications. These attenuators are ideally suited for inclusion in a wide variety of equipment, such as test equipment, IF amplifiers, receivers, etc. In general, the electrical specifications are the same as for the in-line model. They differ, however, in mechanical configuration.

These models are designed to be mounted as shown with "for mounting" holes tapped for an 8/32 by 3/8 inch machine screw centered 1/8 inch from each edge. The placement of connector mounting is left to the customer. One end-mounted terminal and one front-mounted terminal are located as indicated in the drawing by "C" and "B", or two front-mounted terminals may be specified as indicated by "A" and "B". Prices are available on request to the factory.

*The Series 20 attenuators may also be purchased with a fixed, accurate, 10 db insertion loss. Specify Catalog No. 430B (50Ω), 440B (70Ω), or 450B (90Ω). Price \$85.00

BUSINESS REPLY CARD

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FIRST CLASS

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PINE BROOK, N. J.

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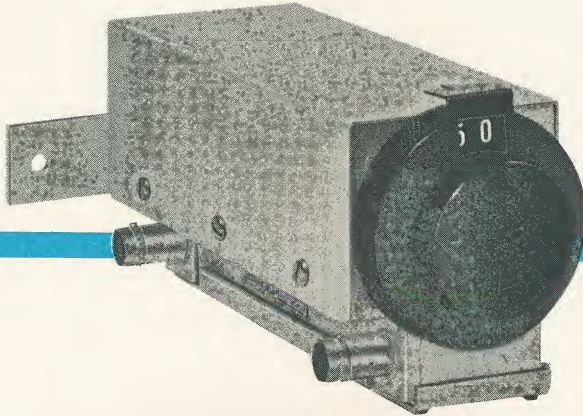
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Firm_____

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SERIES 40
433A

SERIES 50
434A 444A 454A

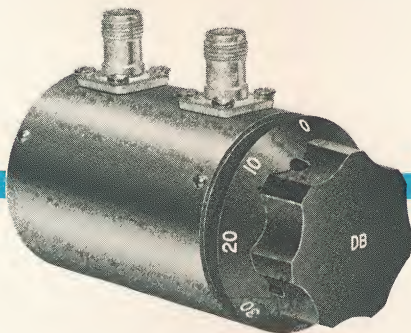
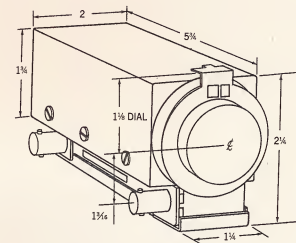
Kay's Series 40 and 50 Attenuators are dual-rotary units which provide highly precise ranges of attenuation from zero to 119 db or zero to 99 db, respectively, in precise 1 db steps. These models adapt our precise in-line toggle attenuator pads to rotary style control with direct reading, digital, attenuation indicator.

The Series 50 makes available the superior operating characteristics of the Kay miniature in-line units in a mechanical configuration requiring very little front panel area, as well as providing simplified reading. It provides 0-99 db of attenuation in 1 db steps, a range *previously* requiring two or more attenuators, each one of equal or *greater size*, and *greater* insertion loss.

The Series 50 units are adapted for on the bench or behind the panel mounting. Quality is controlled by using only custom switches, featuring solid-silver con-

tacts, and precise—1% tolerance—carbon film resistors.

The Series 40 provides precise 1 db steps of attenuation from 0-119 db and features silver enclosures and switch contacts for low loss and superior match. The standard Series 40 Attenuator has 50 Ω characteristic impedance. 75 and 90 ohm models are available upon special request.



SERIES 60

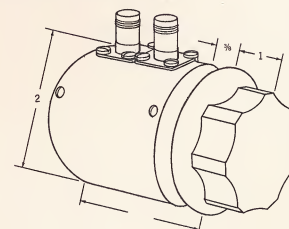
435A 436A 1/435A

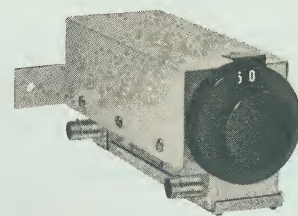
The Series 60 Attenuators are DC to 1300 MHz rotary, decimal-step attenuators providing 0.1 db, 1.0 db, and 10 db, steps in single units of 1.0, 10, and 60 db. Combinations of units are also available.

These new rotary attenuators adapt the configuration of *precision pi pads in individually tuned and shielded cavities* used so successfully in Kay in-line attenuators. Printed circuit techniques have been employed to provide high-frequency switching with new low mechanical stress and the lasting contact qualities of beryllium and coin silver. Low insertion loss, high accuracy, excellent VSWR and, all important, repeatability in measurements, provide for reliable and inexpensive attenuators

over an extended frequency range.

The Series 60 units are small and are designed primarily for panel mounting. A standard ball bearing detent mechanism is used.



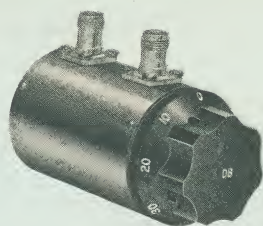


50 OHM ATTENUATORS

Attenuation Range	0-101 db in one db steps	0-41* db in one db steps	0-22.1 db 0.1 db steps	0-132** db in one db steps	0-119 db in one db steps
Attenuation Steps (db)	9 Steps 1, 2, 3, 5, 10, 20, 20, 20, 20	6 Steps 1, 2, 3, 5, 10, 20	9 Steps .1, .2, .3, .5, 1, 2, 3, 5, 10	9 Steps 1, 2, 3, 6, 10, 20, 30, 30, 30	9 Steps, 1 db 11 Steps, 10 db
Frequency	DC to 1 GHz			DC to 1 GHz	
Type of Controls	In-line Toggle Switches (Coin-silver contacts in molded Teflon)			Miniature In-line	Dual
Typical Overall Accuracy \pm	0.6 db: 0-.25 GHz 1.2 db: .25-.5 GHz 2.0 db: .5-1 GHz	0.5: 0-.25 GHz 0.9: .25-.5 GHz 1.2: .5-1 GHz	5% at .1 GHz .5 db at .25 GHz	1.0 db: 0-.5 GHz 1.5 db: .5-1 GHz	.6 db: 0-.25 GHz 1.2 db: .25-.5 GHz
Maximum VSWR	1.2:1, 0-.25 GHz 1.4:1, .25-1 GHz	1.2:1, 0-.25 GHz 1.4:1, .25-1 GHz	1.2:1, 0-.25 GHz	1.2:1, 0-.5 GHz 1.4:1, .5-1 GHz	1.2:1, 0-.25 GHz 1.4:1, .25-.5 GHz
Insertion Loss 0 - 250 MHz 250 - 500 MHz 500 - 1000 MHz At 4 GHz Typical (db)	$\leq .1$ $\leq .2$ $\leq .6$	$\leq .1$ $\leq .1$ $\leq .5$	$\leq .1$	$\leq .2$ $\leq .35$ $\leq .7$	$\leq .1$ $\leq .2$
Power (watts)	1	1	1	$\frac{1}{2}$	$\frac{1}{2}$
Dimensions (inches)	2 x 9 $\frac{3}{4}$ x 2	2 x 7 x 2	2 x 9 $\frac{3}{4}$ x 2	1 $\frac{1}{4}$ x 6 $\frac{1}{4}$ x $\frac{7}{8}$	5 dia. x 2 $\frac{1}{4}$
Weight	3 lbs.	2 lbs.	3 lbs.	8 oz.	3 lbs. 8 oz.
Price	\$99	\$80	\$99	\$145	\$265
Catalog No.	432D	431C	1/432C	460A	433A

*Also available with fixed 10 db loss. Specify 430B — \$85

**Also available from 0-101 db in one db steps — 439A — \$120 and 0-102.5 db in 0.5 db steps — 437A — \$145



ATTENUATORS

	0-99 db in one db steps	0-10 db in one db steps	0-60 db in ten db steps	0-1 db in 0.1 db steps	0-132 db in 1 db Steps
ea. ea.	9 Steps, 1 db ea. 9 Steps, 10 db ea.	10 Steps 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	6 Steps 10, 20, 30, 40, 50, 60	10 Steps .1, .2, .3, .4, .5, .6, .7, .8, .9, 1.0	9 Steps 1, 2, 3, 6, 10, 20, 30, 30, 30
	DC to 1.3 GHz				DC-4 GHz
Rotary, Digital	Rotary-Step				In-Line Slide Switches
Hz GHz	.6 db: 0-.5 GHz 1.5 db: .5-1 GHz	.2 db: 0-.3 GHz .3 db: .3-1 GHz	2% at .3 GHz 5% at 1 GHz	.025 db: 0-.5 GHz .05 db: .5-1 GHz	2% to max. 1 db — 1 GHz 2% to max. 1.5 db — 2 GHz 3% to max. 3 db — 3 GHz 5% to max. 5 db — 4 GHz
Hz Hz	1.2:1, 0-.5 GHz 1.4:1, .5-1 GHz	1.1:1, 0-.3 GHz 1.3:1, .3-1 GHz		1.1:1, 0-.3 GHz 1.4:1, .3-1 GHz	1.15:1, 0-1 GHz 1.9:1 at 4 GHz
	$\leq .2$ $\leq .6$ ≤ 1.0	$\leq .1$ $\leq .1$ $\leq .2$	$\leq .1$ $\leq .1$ $\leq .2$	$\leq .1$ $\leq .1$ $\leq .1$	$\leq .2$ $\leq .6$
	1	1	$\frac{1}{2}$	1	1
	2 $\frac{1}{4}$ x 2 x 5 $\frac{3}{4}$	2 dia. x 2 $\frac{1}{8}$	2 dia. x 2 $\frac{7}{8}$	2 dia. x 2 $\frac{1}{8}$	8 $\frac{3}{8}$ x 2 $\frac{3}{8}$ x 1 $\frac{5}{8}$
	2 lbs.	1 lb.	12 oz.	12 oz.	2 $\frac{1}{2}$ lbs.
	\$240	\$90	\$90	\$90	\$295
	434A	435A	436A	1/435A	461A

75 OHM ATTENUATORS

Attenuation Range	0-101 db in one db steps	0-41 db in one db steps	0-22.1 db in 0.1 db steps	0-132 db in one db steps	0-99 db in one db steps
Attenuation Steps (db)	9 Steps 1, 2, 3, 5, 10, 20, 20, 20, 20	6 Steps 1, 2, 3, 5, 10, 20	9 Steps .1, .2, .3, .5, 1, 2, 3, 5, 10	9 Steps 1, 2, 3, 6, 10 20, 30, 30, 30	9 Steps of 1 db each 9 Steps of 10 db each
Type of Controls	In-line Toggle Switches (Coin-silver contacts in molded Teflon)			Miniature In-line	Dual-Rotary, Digital
Typical Overall Accuracy (\pm)	1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz	.5 db: 0-.25 GHz 1.2 db: .25-.5 GHz	5% at .1 GHz 10% at .25 GHz	1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz	1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz
Maximum VSWR	1.2:1 0-.25 GHz 1.4:1 .25-.5 GHz	1.2:1 0-.25 GHz 1.4:1 .25-.5 GHz	1.4:1 0-.25 GHz	1.2:1 0-.25 GHz 1.4:1 .25-.5 GHz	1.2:1 0-.25 GHz 1.4:1 .25-.5 GHz
Insertion Loss 0 - 250 MHz 250 - 500 MHz Typical (db)	$\leq .1$ $\leq .2$	$\leq .1$ $\leq .2$	$\leq .1$	$\leq .1$ $\leq .2$	$\leq .1$ $\leq .2$
Dimensions (inches)	2 x 9 $\frac{3}{4}$ x 2	2 x 7 x 2	2 x 9 $\frac{3}{4}$ x 2	1 $\frac{1}{4}$ x 6 $\frac{1}{4}$ x $\frac{7}{8}$	2 $\frac{1}{4}$ x 2 x 5 $\frac{3}{4}$
Weight	3 lbs.	2 lbs.	3 lbs.	8 oz.	2 lbs
Price	\$99	\$80	\$99	\$145	\$240
Catalog No.	442C	441B	1/4 42C	470A	444A

Impedance: 75 ohms

Frequency: DC to 500 MHz+

Power: $\frac{1}{2}$ watt

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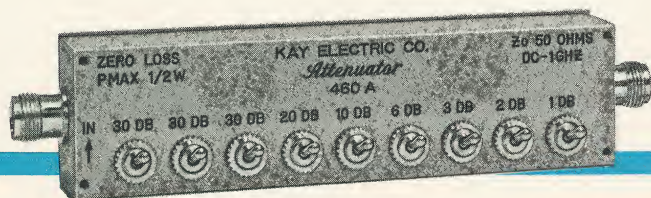
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PINE BROOK, N. J.

90 OHM ATTENUATORS

0-101 db in one db steps	0-41 db in one db steps	0-22.1 db in 0.1 db steps	0-132 db in one db steps	0-99 db in one db steps	Attenuation Range
9 Steps 1, 2, 3, 5, 10, 20, 20, 20, 20	6 Steps 1, 2, 3, 5, 10, 20	9 Steps .1, .2, .3, .5, 1, 2, 3, 5, 10	9 Steps 1, 2, 3, 6, 10, 20, 30, 30, 30	9 Steps of 1 db each 9 Steps of 10 db each	Attenuation Steps (db)
In-line Toggle Switches (Coin-silver contacts in molded Teflon)			Miniature In-line	Dual-Rotary Digital	Type of Controls
1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz	.5 db: 0-.25 GHz 1.2 db: .25-.5 GHz	5% at .1 GHz 10% at .25 GHz	1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz	1.0 db: 0-.25 GHz 2.0 db: .25-.5 GHz	Typical Overall Accuracy (±)
1.3:1 0-.25 GHz 1.5:1 .25-.5 GHz	1.3:1 0-.25 GHz 1.5:1 .25-.5 GHz	1.4:1 0-.25 GHz	1.3:1 0-.25 GHz 1.5:1 .25-.5 GHz	1.3:1 0-.25 GHz 1.5:1 .25-.5 GHz	Maximum VSWR
≤.1 ≤.2	≤.1 ≤.2	≤.1	≤.1 ≤.2	≤.1 ≤.2	Insertion Loss 0 - 250 MHz 250 - 500 MHz Typical (db)
2 x 9¾ x 2	2 x 7 x 2	2 x 9¾ x 2	1¼ x 6¼ x 7⁄8	2¼ x 2 x 5¾	Dimensions (inches)
3 lbs.	2 lbs.	3 lbs.	8 oz.	2 lbs.	Weight
\$99	\$80	\$99	\$145	\$240	Price
452C	451B	1/452C	480A	454A	Catalog No.

Impedance: 90 ohms
Frequency: DC to 500 MHz+
Power: ½ watt



SERIES 100

460A

470A

480A

The Series 100 and 120 attenuators are small, compact, lightweight units that can be held by a cable connector, or be mounted on less than $1\frac{1}{4}$ " x 5" of panel space.

These new miniature in-line attenuators provide from 0-132 db in one db steps (100 series) and from 0-102.5 db in 0.5 db steps (120 series). Both models feature Kay's proven miniature RF toggle switches and precision 1% resistors carefully arranged in highly-shielded broad-tuned compartments. These models also offer:

- WIDE FREQUENCY RANGES
- WIDE ATTENUATION RANGES
- ZERO INSERTION LOSS

SERIES 120

437A

447A

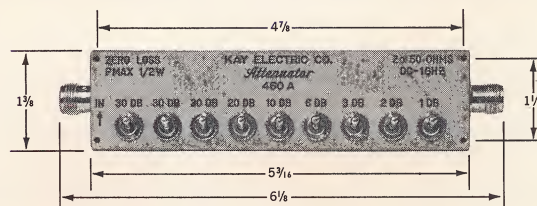
457A

SERIES 100

- DC-1GHz
- 0-132 db in 1 db steps
- Price: \$145.00

SERIES 120

- DC-1GHz
- 0-102.5 db in 0.5 db steps
- Price: \$145.00



KAY ELECTRIC COMPANY

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ORDERING INFORMATION

All orders and quotation requests may be sent either to the main office in Pine Brook, New Jersey, our offices listed above or any Kay rep office. Terms are Net 30 days; Cash Discount $\frac{1}{2}\%$ 10 days. Replacement parts are net only. Shipments are made on open account where credit has been established, against payment in advance when offered, or C.O.D. Prices quoted are Net and FOB Pine Brook, New Jersey. FOB prices overseas are available from overseas offices. U.S. funds are required for payment.

Prices and specifications are subject to change without notice. Minimum order is \$10 (for orders of less than \$10, add \$1 for handling). Instruments are individually packed and shipped via Railway Express unless otherwise requested.

WARRANTY

Each new instrument manufactured and/or sold by us is warranted to be free from defects in material and workmanship. Our responsibility is limited to repairing (or replacing) any instrument or part thereof (except tubes) for a period of one year when, in our opinion, the repair or replacement is covered by this warranty. Tubes are warranted for a period of three months from date of shipment against failure because of defective material.

REPAIRS

A stock of spare parts is maintained and is available to our customers. The factory will repair, at no charge, equipment which, in our opinion, is covered by our warranty; and at standard rates in cases which, in our opinion, are not covered by our warranty.